b. The names and telephone numbers of persons to contact regarding the plant for emergency and routine situations.

c. A statement certifying when the flow meter(s) and other monitoring instruments and devices were last calibrated, including identification of who performed the calibration.

d. A statement certifying whether the current operation and maintenance manual, and contingency plan, reflect the wastewater treatment plant as currently constructed and operated, and the dates when these documents were last revised and last reviewed for adequacy.

e. The Discharger may also be requested to submit an annual report to the Regional Water Board with both tabular and graphical summaries of the monitoring data obtained during the previous year. Any such request shall be made in writing. The report shall discuss the compliance record. If violations have occurred, the report shall also discuss the corrective actions taken and planned to bring the discharge into full compliance with the waste discharge requirements.

5. **Annual Pretreatment Reporting Requirements.** The Discharger shall submit annually a report to the Regional Water Board, with copies to USEPA Region 9 and the State Water Board, describing the Discharger's pretreatment activities over the previous 12 months. In the event that the Discharger is not in compliance with any conditions or requirements of this Order, including noncompliance with pretreatment audit/compliance inspection requirements, then the Discharger shall also include the reasons for noncompliance and state how and when the Discharger shall comply with such conditions and requirements.

   The Discharger may combine annual pretreatment reporting requirements for both this Facility and their El Dorado Hills Wastewater Treatment Plant (CA0078671). If the reports are combined for both plants, then the Discharger shall note so in its transmittal letter accompanying the submission of the annual report.

   An annual report shall be submitted by **28 February** and include at least the following items:

   a. A summary of analytical results from representative, flow proportioned, 24-hour composite sampling of the POTW's influent and effluent for those pollutants USEPA has identified under Section 307(a) of the CWA which are known or suspected to be discharged by industrial users.

Sludge shall be sampled during the same 24-hour period and analyzed for the same pollutants as the influent and effluent sampling and analysis. The sludge analyzed shall be a composite sample of a minimum of 12 discrete samples taken at equal time intervals over the 24-hour period. Wastewater and sludge sampling and analysis shall be performed at least annually. The Discharger shall also provide any influent, effluent or sludge monitoring data for non-priority pollutants which may be causing or contributing to Interference, Pass-Through or adversely impacting sludge quality. Sampling and analysis shall be performed in accordance with the techniques prescribed in 40 CFR 136 and amendments thereto.

b. A discussion of Upset, Interference, or Pass-Through incidents, if any, at the treatment plant, which the Discharger knows or suspects were caused by industrial users of the POTW. The discussion shall include the reasons why the incidents occurred, the corrective actions taken and, if known, the name and address of, the industrial user(s) responsible. The discussion shall also include a review of the applicable pollutant limitations to determine whether any additional limitations, or changes to existing requirements, may be necessary to prevent Pass-Through, Interference, or noncompliance with sludge disposal requirements.

c. The cumulative number of industrial users that the Discharger has notified regarding Baseline Monitoring Reports and the cumulative number of industrial user responses.

d. An updated list of the Discharger's industrial users including their names and addresses, or a list of deletions and additions keyed to a previously submitted list. The Discharger shall provide a brief explanation for each deletion. The list shall identify the industrial users subject to federal categorical standards by specifying which set(s) of standards are applicable. The list shall indicate which categorical industries, or specific pollutants from each industry, are subject to local limitations that are more stringent than the federal categorical standards. The Discharger shall also list the noncategorical industrial users that are subject only to local discharge limitations. The Discharger shall characterize the compliance status through the year of record of each industrial user by employing the following descriptions:

   i. Complied with baseline monitoring report requirements (where applicable);
   ii. Consistently achieved compliance;
   iii. Inconsistently achieved compliance;
   iv. Significantly violated applicable pretreatment requirements as defined by 40 CFR 403.8(f)(2)(vii);
   v. Complied with schedule to achieve compliance (include the date final compliance is required);
   vi. Did not achieve compliance and not on a compliance schedule; and
   vii. Compliance status unknown.

A report describing the compliance status of each industrial user characterized by the descriptions in items iii. through vii. above shall be submitted for each calendar year **by 28 February of each year**. The report shall identify the specific compliance status of each such industrial user and shall also identify the compliance status of the POTW with regards to audit/pretreatment compliance inspection requirements. If none of the aforementioned conditions exist, at a minimum, a letter indicating that all industries are in compliance and no violations or changes to the pretreatment program have occurred during the quarter must be submitted. The information required in the fourth quarter report shall be included as part of the annual report. This quarterly reporting requirement shall commence upon issuance of this Order.

e. A summary of the inspection and sampling activities conducted by the Discharger during the past year to gather information and data regarding the industrial users. The summary shall include:

   i. the names and addresses of the industrial users subjected to surveillance and an explanation of whether they were inspected, sampled, or both and the frequency of these activities at each user; and
   ii. the conclusions or results from the inspection or sampling of each industrial user.

f. A summary of the compliance and enforcement activities during the past year. The summary shall include the names and addresses of the industrial users affected by the following actions:

   i. Warning letters or notices of violation regarding the industrial users' apparent noncompliance with federal categorical standards or local discharge limitations. For each industrial user, identify whether the apparent violation concerned the federal categorical standards or local discharge limitations.
   ii. Administrative orders regarding the industrial users noncompliance with federal categorical standards or local discharge limitations. For each industrial user, identify whether the violation concerned the federal categorical standards or local discharge limitations.
   iii. Civil actions regarding the industrial users' noncompliance with federal categorical standards or local discharge limitations. For each industrial user, identify whether the violation concerned the federal categorical standards or local discharge limitations.
   iv. Criminal actions regarding the industrial users noncompliance with federal categorical standards or local discharge limitations. For each industrial user, identify whether the violation concerned the federal categorical standards or local discharge limitations.
   v. Assessment of monetary penalties. For each industrial user identify the amount of the penalties.
   vi. Restriction of flow to the POTW.
   vii. Disconnection from discharge to the POTW.

g. A description of any significant changes in operating the pretreatment program which differ from the information in the Discharger's approved Pretreatment Program including, but not limited to, changes concerning: the program's administrative structure, local industrial discharge limitations, monitoring program or monitoring frequencies, legal authority or enforcement policy, funding mechanisms, resource requirements, or staffing levels.

h. A summary of the annual pretreatment budget, including the cost of pretreatment program functions and equipment purchases.

Duplicate signed copies of these Pretreatment Program reports shall be submitted to the Regional Water Board and the:

State Water Resources Control Board
Division of Water Quality
1001 I Street or P.O. Box 100
Sacramento, CA 95812

and the

Regional Administrator
U.S. Environmental Protection Agency W-5
75 Hawthorne Street
San Francisco, CA 94105

ATTACHMENT F – FACT SHEET

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ATTACHMENT F – FACT SHEET

As described in section II of this Order, this Fact Sheet includes the legal requirements and technical rationale that serve as the basis for the requirements of this Order.

This Order has been prepared under a standardized format to accommodate a broad range of discharge requirements for Dischargers in California. Only those sections or subsections of this Order that are specifically identified as "not applicable" have been determined not to apply to this Discharger. Sections or subsections of this Order not specifically identified as "not applicable" are fully applicable to this Discharger.

I. PERMIT INFORMATION

The following table summarizes administrative information related to the facility.

Table F-1. Facility Information

WDID	5B090102001
Discharger	El Dorado Irrigation District
Name of Facility	Deer Creek Wastewater Treatment Plant
Facility Address	1565 Deer Creek Road Cameron Park, CA 95682 El Dorado County
Facility Contact, Title and Phone	Vickie Caulfield, Division Manager, Operations, (530) 642-4058
Authorized Person to Sign and Submit Reports	Tim Sullivan, Senior Engineer, (530) 642-4177 Vickie Caulfield, Division Manager, Operations, (530) 642-4058 Jason Lawrence, Plant Supervisor, (530) 672-9044
Mailing Address	2890 Mosquito Road Placerville, CA 95667
Billing Address	Same as Mailing Address
Type of Facility	Publicly Owned Treatment Works (POTW)
Major or Minor Facility	Major
Threat to Water Quality	1
Complexity	A
Pretreatment Program	Y
Reclamation Requirements	Master Reclamation Permit, Order No. 5-01-146 El Dorado Irrigation District, El Dorado Hills and Deer Creek WWTPs
Facility Permitted Flow	3.6 million gallons per day (MGD) average dry weather flow
Facility Design Flow	3.6 MGD average dry weather flow
Watershed	Upper Cosumnes
Receiving Water	Deer Creek
Receiving Water Type	Inland surface water

A. El Dorado Irrigation District (hereinafter Discharger) is the owner and operator of the Deer Creek Wastewater Treatment Plant (hereinafter Facility), a POTW.

For the purposes of this Order, references to the "discharger" or "permittee" in applicable federal and state laws, regulations, plans, or policy are held to be equivalent to references to the Discharger herein.

B. The Facility discharges wastewater to Deer Creek, a water of the United States, and is currently regulated by Order No. R5-2002-0210, which was adopted on 6 December 2002 and expired on 31 December 2007. The Regional Water Board simultaneously adopted Cease and Desist Order (CDO) No. R5-2002-0211, providing a time schedule for the Discharger to comply with Receiving Water Limitations and complete amendments to the Water Quality Control Plan for the Sacramento and San Joaquin River Basins (Basin Plan) water quality objectives for pH, turbidity and temperature by 1 December 2003. CDO No. R5-2002-0211 also provided a time schedule for the Discharger to comply with effluent limitations for nitrite, nitrate plus nitrite, and total trihalomethanes by 30 December 2006.

C. On 19 July 2002, site-specific Water Quality Objectives for pH and turbidity for Deer Creek in El Dorado County were adopted by the Regional Water Board, then approved by the State Water Resources Control Board (State Water Board), State of California Office of Administrative Law (OAL) and the USEPA, prior to becoming effective on 21 October 2003.

D. On 17 October 2003, the Regional Water Board adopted Amendment No. 1 to CDO No. R5-2002-0211 to extend the compliance period for the Discharger to comply with Receiving Water Limitations for pH, turbidity and temperature until 1 December 2004.

E. On 17 March 2005, the Regional Water Board adopted Amendment No. 1 to Order No. R5-2002-0210 (Resolution No. R5-2005-0028), amending the permit receiving water requirements to reflect the Basin Plan amendment for pH and turbidity. The Regional Water Board simultaneously adopted Resolution No. R5-2005-0029, amending the findings and orders of CDO No. R5-2002-0211 (as amended by Amendment No. 1), to reflect the amended receiving water limitations for pH and turbidity, require the Discharger's immediate compliance with the receiving water limitations for pH and turbidity, and include a new compliance schedule for the Discharger to comply with the receiving water limitation for temperature by 1 December 2005.

F. On 16 September 2005, the Site-Specific Temperature Objective for Deer Creek in El Dorado and Sacramento Counties was adopted by the Regional Water Board, then approved by the State Water Board, OAL, and USEPA, prior to becoming effective on 17 May 2006.

G. The Discharger complied with the requirements of CDO No. R5-2002-0211 (as amended by Amendment No.1 and Resolution No. R5-2005-0029), and the corresponding compliance dates. Therefore, the Regional Water Board adopted Resolution No. R5-2007-0008 on 25 January 2007, rescinding CDO No. R5-2002-0211 and subsequent amendments. The Regional Water Board simultaneously adopted Amendment No. 2 to Order No. R5-2002-0210 to include receiving water temperature limitations based on the objectives set by the Basin Plan amendment for temperature.

H. The terms and conditions of Order No. R5-2002-0210 and subsequent amendments have been automatically continued and remain in effect until new Waste Discharge Requirements (WDRs) and National Pollutant Discharge Elimination System (NPDES) permit are adopted pursuant to this Order.

I. The Discharger filed a report of waste discharge and submitted an application for renewal of its WDRs and NPDES permit on 2 July 2007. A site visit was conducted on 24 April 2008 to observe operations and collect additional data to develop permit limitations and conditions.

II. FACILITY DESCRIPTION

The Discharger provides sewerage service for the communities of Cameron Park and Deer Creek/Motherlode and serves a population of approximately 20,000. The design average dry weather flow capacity is 3.6 MGD.

A. Description of Wastewater and Biosolids Treatment or Controls

The treatment system at the Facility consists of influent siphon system, headworks (consisting of fine screens with grinding, manual bar screens, and grit removal), primary clarification, influent equalization, emergency storage, secondary treatment including biological nutrient removal (BNR), polymer feed, tertiary filtration, and ultraviolet (UV) disinfection. Sodium hypochlorite is used only to maintain residual chlorine in the recycled water pipeline leaving the Facility. Sludge is aerobically digested, gravity thickened, dewatered using a belt filter press, and lime stabilized. Dried biosolids are applied to local farmland or hauled to a landfill.

The Facility has the design capacity to treat 3.6 MGD average dry weather flow, 13.1 MGD of unequalized peak daily flow, and 10.3 MGD of peak equalized flow to liquid treatment. Actual annual average daily flows experienced from May 2004 to April 2005, May 2005 to April 2006, and May 2006 to April 2007 are 3.06 MGD, 3.41 MGD, and 3.23 MGD, respectively. Actual maximum daily flows experienced for the same periods were 7.45 MGD, 10.38 MGD, and 7.14 MGD, respectively.

B. Discharge Points and Receiving Waters

1. The Facility is located in Section 109, T01, R15 and 16, MDB&M, as shown in Attachment B, a part of this Order.

2. Treated municipal wastewater is discharged at Discharge Point 001 to Deer Creek, a water of the United States and a tributary to the Cosumnes River at a point latitude 38° 37' 37" N and longitude 120° 59' 10" W. Deer Creek is tributary to the Cosumnes River and the Sacramento San Joaquin Delta. The Discharge Point is located within the San Joaquin Hydrologic Basin, Middle Sierra Hydrologic Unit, Cosumnes Hydrologic Area, and the Upper Deer Creek Hydrologic Subarea.

C. Summary of Existing Requirements and Self-Monitoring Report (SMR) Data

Effluent limitations contained in Order No. R5-2002-0210 for discharges from Discharge Point 001 (Monitoring Location EFF-001) and representative monitoring data from the term of Order No. R5-2002-0210 are as follows:

Table F-2. Historic Effluent Limitations and Monitoring Data

Parameter	Units	Effluent Limitation			Monitoring Data (1 January 2005 - 31 December 2007)		
		Average Monthly	Average Weekly	Maximum Daily	Highest Average Monthly Discharge	Highest Average Weekly Discharge	Highest Daily Discharge
Ammonia, Total (as N)	mg/L	[1]	--	[2]	<1.0	--	<1.0
	lbs/day	[3]	--	[3]	--	--	--
Biochemical Oxygen Demand (5-day @ 20°C)	mg/L	10 [4]	15 [4]	30 [4]	4.9	14.4	89
		30 [5]	45 [5]	60 [5]			
	lbs/day	208 [4]	313 [4]	626 [4]	--	--	--
		625 [5]	938 [5]	1251 [5]			
	% Removal	85	--	--	95.9 [6]		
Chlorine Residual	mg/L	--	0.01	0.02 [7]	--	--	--
	lbs/day	--	0.21	0.42 [7]	--	--	--
Chlorodibromo methane	ug/L	0.41	--	--	2.2	--	--
	lbs/day	0.009	--	--	--	--	--
Dichlorobromo methane	ug/L	0.56			8.8	--	--
	lbs/day	0.012	--	--	--	--	--
Nitrite Nitrogen, Total (as N)	mg/L	1	--	--	<1.0	--	0.3
	lbs/day	21	--	--	--	--	--
Nitrite + Nitrate (as N)	mg/L	10	--	--	13.6	--	--
	lbs/day	208	--	--	--	--	--
Settleable Solids	ml/L	0.1	--	0.2	<0.05	--	0.10
Total Coliform Organisms	MPN/ 100 mL	--	2.2 [4, 8]	23 [4, 9]	--	4	900
		--	23 [5, 8]	230 [5]			

Parameter	Units	Effluent Limitation			Monitoring Data (1 January 2005 - 31 December 2007)		
		Average Monthly	Average Weekly	Maximum Daily	Highest Average Monthly Discharge	Highest Average Weekly Discharge	Highest Daily Discharge
Total Suspended Solids	mg/L	10 [4]	15 [4]	30 [4]	1.5	3.8	11
		30 [5]	45 [5]	60 [5]			
	lbs/day	208 [4]	313 [4]	626 [4]	--	--	--
		250 [5]	376 [5]	750 [5]			
	% Removal	85	--	--	98.3 [6]	--	--
Total Trihalomethanes	ug/L	80	--	--	66.5	--	--
	lbs/day	1.66	--	--	--	--	--
Turbidity	NTU	2 [4, 10]	--	5 [4, 10]	--	--	4.2
pH	standard units	--	--	6.5 – 8.5	--	--	6.6 – 8.0
Acute Toxicity	% Survival	--	--	[11]	--	--	100

1 Floating effluent limitations calculated in accordance with Table A of Order No. R5-2002-0210.
2 Floating effluent limitations calculated in accordance with Table B of Order No. R5-2002-0210.
3 Using the value, in mg/L, determined from Table A or B of Order No. R5-2002-0210 as appropriate, calculate lbs/day using the formula: z mg/L x 8.345 x 2.5 MGD = y lbs/day.
4 Applies when flow in Deer Creek provides less dilution than 20:1 (stream flow:effluent).
5 Applies when flow in Deer Creek provides a minimum of 20:1 dilution (stream flow:effluent).
6 Minimum observed value.
7 Applied as a 1-hour average effluent limitation.
8 Applied as a 7-day median effluent limitation.
9 The total coliform organisms concentration shall not exceed 23 MPN/100 mL more than once in any 30-day period. No sample shall exceed a concentration of 240 MPN/100 mL.
10 The daily average turbidity shall not exceed 2 NTU. Turbidity shall not exceed 5 NTU more than 5 percent of the time within a 24-hour period. At no time shall the turbidity exceed 10 NTU.
11 Survival of aquatic organisms in 96-hour acute bioassays of undiluted waste shall be no less than:
Minimum for any one bioassay----------70%
Median for any three or more consecutive bioassays----------90%

D. Compliance Summary

1. Between 2002, when previous Order No. R5-2002-0210 was adopted, and April 2008, there have been four Compliance Evaluation Inspections (CEIs) performed by representatives of USEPA; 18 March 2003, 2 February 2005, 19 April 2006, and 22 May 2007. These inspections noted numerous maintenance and operation inadequacies. A fifth CEI was conducted on 14 May 2008. The results of the fifth CEI have not yet been compiled and additional enforcement, if necessary, will occur pending the outcome.

2. USEPA conducted a pretreatment performance evaluation inspection on 12 and 13 April 2003. As a result of the inspection, USEPA issued Administrative Order CWA-307-9-03-025 requiring the Discharger to: 1) begin monthly self-monitoring of the influent, effluent, and receiving water at the Deer Creek Facility and the El Dorado Hills WWTP by 1 January 2004; 2) submit a written description of the pretreatment program for approval by 28 September 2004; 4) adopt local limits and ordinance within 60 days of obtaining approval; and 4) issue all pending permits within 180 days of obtaining approval. The Discharger submitted their Industrial Pretreatment Program package to USEPA on 28 September 2004. The submittal

was reviewed by USEPA and comments were provided to the Discharger. However, the Discharger still does not have an approved pretreatment program. Therefore, this Order requires, within 1 year from adoption of this Order, the submission of a written pretreatment program. The organization and contents of the written description of the pretreatment program are based on guidance provided by USEPA for program submissions. Additionally, the pretreatment program covers both the Deer Creek Facility and the El Dorado Hills WWTP, therefore, a provision has been included in the Monitoring and Reporting Program that allows the Discharger to submit only one annual report for both facilities.

3. The Regional Water Board issued Administrative Civil Liability Complaint No. R5-2008-0502 on 6 February 2008 for Mandatory Minimum Penalties issued pursuant to CWC section 13385 for violations of Order Nos. 99-130 and R5-2002-0210. The complaint charged the Discharger with administrative civil liability in the amount of $24,000, which represents the sum of the statutory Mandatory Minimum Penalties (MMPs) for effluent limitation violations from 1 January 2000 through 30 November 2007.

E. Planned Changes

The Discharger has indicated they have planned to perform a complete SCADA system evaluation. In addition the Discharger is planning to continue optimization of plant processes through fine-tuning of the equalization system.

III. APPLICABLE PLANS, POLICIES, AND REGULATIONS

The requirements contained in this Order are based on the applicable plans, policies, and regulations identified in section II of the Limitations and Discharge Requirements (Findings). This section provides supplemental information, where appropriate, for the plans, policies, and regulations relevant to the discharge.

A. Legal Authority

See Limitations and Discharge Requirements - Findings, Section II.C.

B. California Environmental Quality Act (CEQA)

See Limitations and Discharge Requirements - Findings, Section II.E.

C. State and Federal Regulations, Policies, and Plans

1. **Water Quality Control Plans.** The Regional Water Board adopted a *Water Quality Control Plan, Fourth Edition (Revised October 2007), for the Sacramento and San Joaquin River Basins* (Basin Plan) that designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan. In addition, State Water Board Resolution No. 88-63 requires that, with certain

exceptions, the Regional Water Board assign the municipal and domestic supply use to water bodies that do not have beneficial uses listed in the Basin Plan. The beneficial uses of Deer Creek downstream of the discharge are municipal and domestic supply, agricultural irrigation, agricultural stock watering, water contact recreation, other non-contact water recreation, warm freshwater aquatic habitat, cold freshwater aquatic habitat, warm fish migration habitat, cold fish migration habitat, warm spawning habitat, cold spawning habitat, and wildlife habitat.

2. The Basin Plan on page II-1.00 states: "*Protection and enhancement of existing and potential beneficial uses are primary goals of water quality planning...*" and with respect to disposal of wastewaters states that "*...disposal of wastewaters is [not] a prohibited use of waters of the State; it is merely a use which cannot be satisfied to the detriment of beneficial uses.*"

   The federal CWA section 101(a)(2), states: "it is the national goal that wherever attainable, an interim goal of water quality which provides for the protection and propagation of fish, shellfish, and wildlife, and for recreation in and on the water be achieved by July 1, 1983." Federal Regulations, developed to implement the requirements of the CWA, create a rebuttable presumption that all waters be designated as fishable and swimmable. Federal Regulations, 40 CFR sections 131.2 and 131.10, require that all waters of the State regulated to protect the beneficial uses of public water supply, protection and propagation of fish, shell fish and wildlife, recreation in and on the water, agricultural, industrial and other purposes including navigation. Section 131.3(e), 40 CFR, defines existing beneficial uses as those uses actually attained after 28 November 1975, whether or not they are included in the water quality standards. Federal Regulation, 40 CFR section 131.10 requires that uses be obtained by implementing effluent limitations, requires that all downstream uses be protected and states that in no case shall a state adopt waste transport or waste assimilation as a beneficial use for any waters of the United States.

   This Order contains effluent limitations requiring a tertiary level of treatment, or equivalent, which is necessary to protect the beneficial uses of the receiving water. The Regional Water Board has considered the factors listed in CWC section 13241 in establishing these requirements, as discussed in more detail in the Fact Sheet, Attachment F.

   In reviewing whether the existing and/or potential uses of the Cosumnes River apply to Deer Creek, the Regional Water Board has considered the following facts:

   a. Domestic Supply and Agricultural Supply

      The State Water Board's Resolution No. 88-63 "Sources of Drinking Water" provides that "*All surface and ground waters of the State are considered to be suitable, or potentially suitable, for municipal or domestic water supply and should be so designated by the Regional Boards...*"

The State Water Board has issued water rights to existing water users along Deer Creek and the Cosumnes River downstream of the discharge for domestic and irrigation uses. Since Deer Creek is an ephemeral stream, the creek likely provides groundwater recharge during periods of low flow. The groundwater is a source of drinking water. In addition to the existing water uses, growth in the area downstream of the discharge is expected to continue, which presents a potential for increased domestic and agricultural uses of the water in Deer Creek.

b. Water Contact and Non-Contact Recreation and Esthetic Enjoyment

The Regional Water Board finds that the discharge flows through residential areas, there is ready public access to Deer Creek, exclusion of the public are unrealistic and contact recreational activities currently exist along Deer Creek and downstream waters and these uses are likely to increase as the population in the area grows. Prior to discharge into the Cosumnes River, Deer Creek flows through areas of general public access, meadows, residential areas and parks, to the Cosumnes River. The Cosumnes River also offers recreational opportunities.

c. Groundwater Recharge

In areas where groundwater elevations are below the stream bottom, water from the stream will percolate to groundwater. Since Deer Creek is at times dry, it is reasonable to assume that the stream water is lost by evaporation, flow downstream, and percolation to groundwater providing a source of municipal and irrigation water supply.

d. Freshwater Replenishment

When water is present in Deer Creek, there is hydraulic continuity between Deer Creek and the Cosumnes River. During periods of hydraulic continuity, Deer Creek adds water quantity and may impact the quality of water flowing downstream in the Cosumnes River.

e. Preservation and Enhancement of Fish, Wildlife, and Other Aquatic Resources

Deer Creek flows to the Cosumnes River. The California Department of Fish and Game (DFG) has verified that the fish species present in Deer Creek and downstream waters are consistent with both cold and warm water fisheries, that there is a potential for anadromous fish migration necessitating a cold designation and that trout, a cold water species, have been found both upstream and downstream of the Facility. The Basin Plan (Table II-1) designates the Cosumnes River as being both a cold and warm freshwater habitat. Therefore, pursuant to the Basin Plan (Table II-1, Footnote (2)), the cold designation applies to Deer Creek.

Upon review of the flow conditions, habitat values, and beneficial uses of Deer Creek, and the facts described above, the Regional Water Board finds that the beneficial uses identified in the Basin Plan for the Cosumnes River are applicable to Deer Creek.

3. **Antidegradation Policy.** Section 131.12 requires that the state water quality standards include an antidegradation policy consistent with the federal policy. The State Water Board established California's antidegradation policy in State Water Board Resolution No. 68-16. Resolution No. 68-16 incorporates the federal antidegradation policy where the federal policy applies under federal law. Resolution No. 68-16 requires that existing water quality be maintained unless degradation is justified based on specific findings. The Regional Water Board's Basin Plan implements, and incorporates by reference, both the State and federal antidegradation policies. As discussed in detail in the Fact Sheet (Attachment F, Section IV.D.4.) the discharge is consistent with the antidegradation provisions of 40 CFR section 131.12 and State Water Board Resolution 68-16.

4. **Anti-Backsliding Requirements.** Sections 402(o)(2) and 303(d)(4) of the CWA and federal regulations at title 40, Code of Federal Regulations section 122.44(l) prohibit backsliding in NPDES permits. These anti-backsliding provisions require that effluent limitations in a reissued permit must be as stringent as those in the previous permit, with some exceptions in which limitations may be relaxed. Compliance with the anti-backsliding requirements is discussed in Section IV.D.3.

5. **Emergency Planning and Community Right to Know Act.** Section 13263.6(a), California Water Code, requires that "*the Regional Water Board shall prescribe effluent limitations as part of the waste discharge requirements of a POTW for all substances that the most recent toxic chemical release data reported to the state emergency response commission pursuant to Section 313 of the Emergency Planning and Community Right to Know Act of 1986 (42 U.S.C. Sec. 11023) (EPCRA) indicate as discharged into the POTW, for which the State Water Board or the Regional Water Board has established numeric water quality objectives, and has determined that the discharge is or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to, an excursion above any numeric water quality objective*".

   The most recent toxic chemical data report does not indicate any reportable off-site releases or discharges to the collection system for this Facility. Therefore, a reasonable potential analysis based on information from EPCRA cannot be conducted. Based on information from EPCRA, there is no reasonable potential to cause or contribute to an excursion above any numeric water quality objectives included within the Basin Plan or in any State Water Board plan, so no effluent limitations are included in this permit pursuant to CWC section 13263.6(a).

   However, as detailed elsewhere in this Order, available effluent data indicate that there are constituents present in the effluent that have a reasonable potential to

cause or contribute to exceedances of water quality standards and require inclusion of effluent limitations based on federal and state laws and regulations.

6. **Storm Water Requirements.** USEPA promulgated Federal Regulations for storm water on 16 November 1990 in 40 CFR Parts 122, 123, and 124. The NPDES Industrial Storm Water Program regulates storm water discharges from wastewater treatment facilities. Wastewater treatment plants are applicable industries under the storm water program and are obligated to comply with the Federal Regulations.

7. **Endangered Species Act.** This Order does not authorize any act that results in the taking of a threatened or endangered species or any act that is now prohibited, or becomes prohibited in the future, under either the California Endangered Species Act (Fish and Game Code sections 2050 to 2097) or the Federal Endangered Species Act (16 U.S.C.A. sections 1531 to 1544). This Order requires compliance with effluent limits, receiving water limits, and other requirements to protect the beneficial uses of waters of the state. The Discharger is responsible for meeting all requirements of the applicable Endangered Species Act.

D. Impaired Water Bodies on CWA 303(d) List

1. Under Section 303(d) of the 1972 Clean Water Act, states, territories and authorized tribes are required to develop lists of water quality limited segments. The waters on these lists do not meet water quality standards, even after point sources of pollution have installed the minimum required levels of pollution control technology. On 30 November 2006 USEPA gave final approval to California's 2006 Section 303(d) List of Water Quality Limited Segments. The Basin Plan references this list of Water Quality Limited Segments (WQLSs), which are defined as "*...those sections of lakes, streams, rivers or other fresh water bodies where water quality does not meet (or is not expected to meet) water quality standards even after the application of appropriate limitations for point sources (40 CFR 130, et seq.).*" The Basin Plan also states, "*Additional treatment beyond minimum federal standards will be imposed on dischargers to [WQLSs]. Dischargers will be assigned or allocated a maximum allowable load of critical pollutants so that water quality objectives can be met in the segment.* Deer Creek is not listed in the 303(d) list of impaired water bodies. The Cosumnes River, to which Deer Creek is tributary, is listed as a WQLS for exotic species on the 303(d) list of impaired water bodies. Portions of the Sacramento San Joaquin Delta are also listed as WQLS for exotic species, various pesticides, electrical conductivity, PCBs, organic enrichment/low dissolved oxygen, pathogens, and dioxins and furans. All portions of the Delta are WQLSs for unknown toxicity and mercury. Effluent limitations for some of these constituents are included in this Order and discussed in further in the Fact Sheet (Attachment F).

2. **Total Maximum Daily Loads.** USEPA requires the Regional Water Board to develop total maximum daily loads (TMDLs) for each 303(d) listed pollutant and water body combination. TMDLs have not been developed for Deer Creek or the Cosumnes River.

E. Other Plans, Polices and Regulations

1. The discharge authorized herein and the treatment and storage facilities associated with the discharge of treated municipal wastewater, except for discharges of residual sludge and solid waste, are exempt from the requirements of Title 27, California Code of Regulations (CCR), section 20005 *et seq.* (hereafter Title 27). The exemption, pursuant to Title 27 CCR section 20090(a), is based on the following:

   a. The waste consists primarily of domestic sewage and treated effluent;

   b. The waste discharge requirements are consistent with water quality objectives; and

   c. The treatment and storage facilities described herein are associated with a municipal wastewater treatment plant.

IV. RATIONALE FOR EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

Effluent limitations and toxic and pretreatment effluent standards established pursuant to Sections 301 (Effluent Limitations), 302 (Water Quality Related Effluent Limitations), 304 (Information and Guidelines), and 307 (Toxic and Pretreatment Effluent Standards) of the Clean Water Act (CWA) and amendments thereto are applicable to the discharge.

The Federal CWA mandates the implementation of effluent limitations that are as stringent as necessary to meet water quality standards established pursuant to state or federal law [33 U.S.C., §1311(b)(1)(C); 40 CFR, §122.44(d)(1)]. NPDES permits must incorporate discharge limits necessary to ensure that water quality standards are met. This requirement applies to narrative criteria as well as to criteria specifying maximum amounts of particular pollutants. Pursuant to Federal Regulations, 40 CFR §122.44(d)(1)(i), NPDES permits must contain limits that control all pollutants that "*are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any state water quality standard, including state narrative criteria for water quality.*" Federal Regulations, 40 CFR, §122.44(d)(1)(vi), further provide that "[w]*here a state has not established a water quality criterion for a specific chemical pollutant that is present in an effluent at a concentration that causes, has the reasonable potential to cause, or contributes to an excursion above a narrative criterion within an applicable State water quality standard, the permitting authority must establish effluent limits.*"

The CWA requires point source discharges to control the amount of conventional, non-conventional, and toxic pollutants that are discharged into the waters of the United States. The control of pollutants discharged is established through effluent limitations and other requirements in NPDES permits. There are two principal bases for effluent limitations: 40 CFR §122.44(a) requires that permits include applicable technology-based limitations and standards, and 40 CFR §122.44(d) requires that permits include water quality-based

effluent limitations to attain and maintain applicable numeric and narrative water quality criteria to protect the beneficial uses of the receiving water where numeric water quality objectives have not been established. The Regional Water Board's Basin Plan, page IV-17.00, contains an implementation policy ("Policy for Application of Water Quality Objectives" that specifies that the Regional Water Board "*will, on a case-by-case basis, adopt numerical limitations in orders which will implement the narrative objectives.*" This Policy complies with 40 CFR §122.44(d)(1). With respect to narrative objectives, the Regional Water Board must establish effluent limitations using one or more of three specified sources, including (1) USEPA's published water quality criteria, (2) a proposed state criterion (*i.e.*, water quality objective) or an explicit state policy interpreting its narrative water quality criteria (*i.e.*, the Regional Water Board's "Policy for Application of Water Quality Objectives")(40 CFR §§122.44(d)(1) (vi) (A), (B) or (C)), or (3) an indicator parameter. The Basin Plan contains a narrative objective requiring that: "*All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life*" (narrative toxicity objective). The Basin Plan requires the application of the most stringent objective necessary to ensure that surface water and groundwater do not contain chemical constituents, discoloration, toxic substances, radionuclides, or taste and odor producing substances that adversely affect beneficial uses. The Basin Plan states that material and relevant information, including numeric criteria, and recommendations from other agencies and scientific literature will be utilized in evaluating compliance with the narrative toxicity objective. The Basin Plan also limits chemical constituents in concentrations that adversely affect surface water beneficial uses. For waters designated as municipal, the Basin Plan specifies that, at a minimum, waters shall not contain concentrations of constituents that exceed Maximum Contaminant Levels (MCL) of CCR Title 22. The Basin Plan further states that, to protect all beneficial uses, the Regional Water Board may apply limits more stringent than MCLs.

A. Discharge Prohibitions

1. As stated in section I.G of Attachment D, Standard Provisions, this Order prohibits bypass from any portion of the treatment facility. Federal Regulations, 40 CFR 122.41 (m), define "bypass" as the intentional diversion of waste streams from any portion of a treatment facility. This section of the Federal Regulations, 40 CFR 122.41 (m)(4), prohibits bypass unless it is unavoidable to prevent loss of life, personal injury, or severe property damage. In considering the Regional Water Board's prohibition of bypasses, the State Water Board adopted a precedential decision, Order No. WQO 2002-0015, which cites the Federal Regulations, 40 CFR 122.41(m), as allowing bypass only for essential maintenance to assure efficient operation.

2. The Discharger replaced their chlorination/dechlorination effluent disinfection process with a UV disinfection system in August 2006. On 20 October 2006, the Discharger submitted a letter to the Regional Water Board stating that chlorine is not used anywhere in the treatment process at the Facility. However, chlorine is used in the reclaimed water distribution system for flushing of pipelines and algae control. Therefore, the Regional Water Board adopted Amendment No. 2 to Order

No. R5-2002-0210, which discontinued the effluent limitations for chlorine residual and contained a prohibition of the use of chlorine and/or chlorine containing substances within the treatment process that result in discharge of chlorine and/or chlorine containing substances into the receiving water. This prohibition has been retained in this Order.

B. Technology-Based Effluent Limitations

1. Scope and Authority

Regulations promulgated in section 125.3(a)(1) require technology-based effluent limitations for municipal dischargers to be placed in NPDES permits based on Secondary Treatment Standards or Equivalent to Secondary Treatment Standards.

The Federal Water Pollution Control Act Amendments of 1972 (PL 92-500) established the minimum performance requirements for POTWs [defined in section 304(d)(1)]. Section 301(b)(1)(B) of that Act requires that such treatment works must, as a minimum, meet effluent limitations based on secondary treatment as defined by the USEPA Administrator.

Based on this statutory requirement, USEPA developed secondary treatment regulations, which are specified in Part 133. These technology-based regulations apply to all municipal wastewater treatment plants and identify the minimum level of effluent quality attainable by secondary treatment in terms of biochemical oxygen demand (BOD_5), total suspended solids (TSS), and pH.

2. Applicable Technology-Based Effluent Limitations

a. **BOD_5 and TSS.** Federal Regulations, 40 CFR Part 133, establish the minimum weekly and monthly average level of effluent quality attainable by secondary treatment for BOD_5 and TSS. As required in Order No. R5-2002-0210, tertiary treatment is necessary to protect the beneficial uses of the receiving stream and the final effluent limitations for BOD_5 and TSS are based on the technical capability of the tertiary process. BOD_5 is a measure of the amount of oxygen used in the biochemical oxidation of organic matter. The secondary and tertiary treatment standards for BOD_5 and TSS are indicators of the effectiveness of the treatment processes. The principal design parameter for wastewater treatment plants is the daily BOD_5 and TSS loading rates and the corresponding removal rate of the system. In applying 40 CFR Part 133 for weekly and monthly average BOD_5 and TSS limitations, the application of tertiary treatment processes results in the ability to achieve lower levels for BOD_5 and TSS than the secondary standards currently prescribed; the 30-day average BOD_5 and TSS limitations have been revised to 10 mg/L, which is technically based on the capability of a tertiary system. In addition to the average weekly and average monthly effluent limitations, a daily maximum effluent limitation for BOD_5 and TSS is included in the Order to ensure that the treatment works are not organically overloaded and operate in accordance with design capabilities. See

Table F-3 for final technology-based effluent limitations required by this Order. In addition, 40 CFR 133.102, in describing the minimum level of effluent quality attainable by secondary treatment, states that the 30-day average percent removal shall not be less than 85 percent. If 85 percent removal of BOD_5 and TSS must be achieved by a secondary treatment plant, it must also be achieved by a tertiary (i.e., treatment beyond secondary level) treatment plant. This Order contains a limitation requiring an average of 85 percent removal of BOD_5 and TSS over each calendar month.

Title 22 and other recommendations of the California Department of Public Health (DPH; formerly the Department of Health Services) generally recommend that it is necessary to treat wastewater to a tertiary level or provide 20:1 dilution for secondary treated wastewater in order to protect the public health for contact recreational activities or the irrigation of food crops. Order No. R5-2002-0210 contained an effluent limitation for BOD_5 and TSS based on secondary treatment standards applicable when flow in Deer Creek provides a daily average stream flow-to-effluent dilution of 20:1. Based on a review of data submitted by the Discharger, receiving water dilution is usually less than 20:1, however these effluent limitations are consistent with DPH recommendations and are retained in this Order.

b. **pH.** Regulations at 40 CFR Part 133 also establish technology-based effluent limitations for pH. The secondary treatment standards require the pH of the effluent to be no lower than 6.0 and no greater than 9.0 standard units.

c. **Flow.** The Facility was designed to provide a tertiary level of treatment for up to a design flow of 3.6 MGD. Therefore, this Order contains an average dry weather flow effluent limit of 3.6 MGD.

Summary of Technology-based Effluent Limitations
Discharge Point No. 001

Table F-3. Summary of Technology-based Effluent Limitations

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Biochemical Oxygen Demand (5-day @ 20°C)	mg/L	10 [1]	15 [1]	30 [1]	--	--
		30 [2]	45 [2]	60 [2]	--	--
	lbs/day [3]	300 [1]	450 [1]	901 [1]	--	--
		901 [2]	1,351 [2]	1,801 [2]	--	--
	% Removal	85	--	--	--	--
Total Suspended Solids	mg/L	10 [1]	15 [1]	30 [1]	--	--
		30 [2]	45 [2]	60 [2]	--	--
	lbs/day [3]	300 [1]	450 [1]	901 [1]	--	--
		901 [2]	1,351 [2]	1,801 [2]	--	--
	% Removal	85	--	--	--	--
pH	standard units	--	--	--	6.0	9.0
Average Dry Weather Flow	MGD	--	--	3.6	--	--

[1] Applies when flow in Deer Creek provides less than a daily average stream flow-to-effluent dilution of 20:1.
[2] Applies when flow in Deer Creek provides a daily average stream flow-to-effluent dilution of 20:1.
[3] Based on an average dry weather flow of 3.6 MGD.

C. Water Quality-Based Effluent Limitations (WQBELs)

1. Scope and Authority

As specified in section 122.44(d)(1)(i), permits are required to include WQBELs for pollutants (including toxicity) that are or may be discharged at levels that cause, have reasonable potential to cause, or contribute to an in-stream excursion above any state water quality standard. The process for determining reasonable potential and calculating WQBELs when necessary is intended to protect the designated uses of the receiving water as specified in the Basin Plan, and achieve applicable water quality objectives and criteria that are contained in other state plans and policies, or any applicable water quality criteria contained in the CTR and NTR.

2. Applicable Beneficial Uses and Water Quality Criteria and Objectives

a. **Receiving Water.** Deer Creek is tributary to the Cosumnes River. The Basin Plan does not identify beneficial uses for Deer Creek, but does identify uses for the Cosumnes River. Therefore, the beneficial uses of the Cosumnes River as described in Section III.C.1 are applied to Deer Creek.

b. **Hardness.** While no effluent limitation for hardness is necessary in this Order, hardness is critical to the assessment of the need for, and the development of,

effluent limitations for certain metals. The *California Toxics Rule* and the *National Toxics Rule* contain water quality criteria for seven metals that vary as a function of hardness, the lower the hardness the lower the water quality criteria. The hardness-dependent metal criteria include cadmium, copper, chromium III, lead, nickel, silver, and zinc.

Effluent limitations for the discharge must be set to protect the beneficial uses of the receiving water for all discharge conditions. In the absence of the option of including condition-dependent, "floating" effluent limitations that are reflective of actual hardness conditions at the time of discharge, effluent limitations must be set using a reasonable worst-case condition in order to protect beneficial uses for all discharge conditions. The SIP does not address how to determine hardness for application to the equations for the protection of aquatic life when using hardness-dependent metals criteria. It simply states, in Section 1.2, that the criteria shall be properly adjusted for hardness using the hardness of the receiving water. The CTR requires that, for waters with a hardness of 400 mg/L (as $CaCO_3$), or less, the actual ambient hardness of the surface water must be used. It further requires that the hardness values used must be consistent with the design discharge conditions for design flows and mixing zones.[2] The CTR does not define whether the term "ambient," as applied in the regulations, necessarily requires the consideration of upstream as opposed to downstream hardness conditions.

The point in the receiving water affected by the discharge is downstream of the discharge. As the effluent mixes with the receiving water, the hardness of the receiving water can change. Therefore, it is appropriate to use the ambient hardness downstream of the discharge that is a mixture of the effluent and receiving water for the determination of the CTR hardness-dependent metals criteria. Recent studies indicate that using the lowest recorded receiving water hardness for establishing water quality criteria is not always protective of the receiving water under various mixing conditions (e.g. when the effluent hardness is less than the receiving water hardness). The studies evaluated the relationships between hardness and the CTR metals criterion that is calculated using the CTR metals equation. The equation describing the total recoverable regulatory criterion, as established in the CTR, is as follows:

$$\text{CTR Criterion} = e^{m[\ln(H)]+b} \qquad \text{(Equation 1)}$$

Where:

H = Design Hardness
b = metal- and criterion-specific constant
m = metal- and criterion-specific constant

[2] See 40 CFR 131.38(c)(4)(i)

The constants "m" and "b" are specific to both the metal under consideration, and the type of total recoverable criterion (i.e. acute or chronic). The metal-specific values for these constants are provided in the CTR at paragraph (b)(2), Table 1.

The relationship between the Design Hardness and the resulting criterion in Equation 1 can exhibit either a downward-facing (i.e., concave downward) or an upward-facing (i.e., concave upward) curve depending on the values of the criterion-specific constants. The curve shapes for acute and chronic criteria for the metals are as follows:

Concave Downward: cadmium (chronic), chromium (III), copper, nickel, and zinc

Concave Upward: cadmium (acute), lead, and silver (acute)

For those contaminants where the regulatory criteria exhibit a concave downward relationship as a function of hardness, use of the lowest recorded effluent hardness for establishment of water quality objectives is fully protective of all beneficial uses regardless of whether the effluent or receiving water hardness is higher. Use of the lowest recorded effluent hardness is also protective under all possible mixing conditions between the effluent and the receiving water (i.e., from high dilution to no dilution). Therefore, for cadmium (chronic), chromium (III), copper, nickel, and zinc, the reasonable worst-case ambient hardness can be estimated by using the lowest effluent hardness. The water quality criteria for these metals were calculated for this Order using Equation 1 and a reported minimum effluent hardness of 42 mg/L as CaCO3, which was reported in a technical memorandum dated 18 October 2006 from the Discharger's contractor in support of the WER conducted for copper and reflects effluent hardness data collected from July 1997 through December 1998, February 2002, and September 2002 through August 2006.

For those metals where the regulatory criteria exhibit a concave upward relationship as a function of hardness, water quality objectives based on either the effluent hardness or the receiving water hardness alone, would not be protective under all mixing scenarios. Instead, both the hardness of the upstream receiving water and the effluent are required to determine the reasonable worst-case ambient hardness. In this case, using the lowest upstream receiving water hardness in Equation 2, below, is protective if the effluent hardness is ALWAYS higher than the receiving water hardness. Under circumstances where the effluent hardness is not ALWAYS higher than the receiving water hardness, it may be appropriate to use the highest reported upstream receiving water hardness in Equation 2. The following equation provides fully protective water quality criteria for those metals that exhibit a concave upward relationship.

$$\text{CTR Criterion} = \left[\frac{m}{H_{rw}} \cdot (H_{eff} - H_{rw}) + 1\right] \cdot e^{m \cdot \ln(H_{rw}) + b} \quad \text{(Equation 2)}$$

Where:

H_{eff} = effluent hardness
H_{rw} = upstream receiving water hardness
b = metal- and criterion-specific constant
m = metal- and criterion-specific constant

Therefore, for cadmium (acute), lead, and silver (acute) water quality criteria were calculated using Equation 2 with a lowest reported effluent hardness of 42 mg/L as $CaCO_3$ and a highest reported upstream receiving water hardness of 290 mg/L as $CaCO_3$, based on 156 samples taken between January 2005 and December 2007.

c. **Assimilative Capacity/Mixing Zone.** The ephemeral nature of Deer Creek means that the designated beneficial uses must be protected, but that credit for receiving water dilution is not available.

3. Determining the Need for WQBELs

a. CWA section 301 (b)(1) requires NPDES permits to include effluent limitations that achieve technology-based standards and any more stringent limitations necessary to meet water quality standards. Water quality standards include Regional Water Board Basin Plan beneficial uses and narrative and numeric water quality objectives, State Water Board-adopted standards, and federal standards, including the CTR and NTR. The Basin Plan includes numeric site-specific water quality objectives and narrative objectives for toxicity, chemical constituents, and tastes and odors. The narrative toxicity objective states: "*All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.*" (Basin Plan at III-8.00.) With regards to the narrative chemical constituents objective, the Basin Plan states that waters shall not contain chemical constituents in concentrations that adversely affect beneficial uses. At minimum, "*...water designated for use as domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels (MCLs)*" in Title 22 of CCR. The narrative tastes and odors objective states: "*Water shall not contain taste- or odor-producing substances in concentrations that impart undesirable tastes or odors to domestic or municipal water supplies or to fish flesh or other edible products of aquatic origin, or that cause nuisance, or otherwise adversely affect beneficial uses.*"

b. Federal regulations require effluent limitations for all pollutants that are or may be discharged at a level that will cause or have the reasonable potential to cause, or contribute to an in-stream excursion above a narrative or numerical

water quality standard. Based on information submitted as part of the application, in studies, and as directed by monitoring and reporting programs, the Regional Water Board finds that the discharge has a reasonable potential to cause or contribute to an in-stream excursion above a water quality standard for ammonia, nitrate plus nitrite, pH, total coliform organisms, and zinc. WQBELs for these constituents are included in this Order. A summary of the reasonable potential analysis (RPA) is provided in Attachment G, and a detailed discussion of the RPA for each constituent is provided below.

c. The Regional Water Board conducted the RPA in accordance with Section 1.3 of the SIP. Although the SIP applies directly to the control of CTR priority pollutants, the State Water Board has held that the Regional Water Board may use the SIP as guidance for water quality-based toxics control.[3] The SIP states in the introduction "*The goal of this Policy is to establish a standardized approach for permitting discharges of toxic pollutants to non-ocean surface waters in a manner that promotes statewide consistency.*" Therefore, in this Order the RPA procedures from the SIP were used to evaluate reasonable potential for both CTR and non-CTR constituents.

d. WQBELs were calculated in accordance with section 1.4 of the SIP, as described in Attachment F, Section IV.C.4.

e. **Aluminum.** USEPA developed National Recommended Ambient Water Quality Criteria for protection of freshwater aquatic life for aluminum. The recommended 4-day average (chronic) and 1-hour average (acute) criteria for aluminum are 87 ug/L and 750 ug/L, respectively.

   Footnote L to the National Recommended Ambient Water Quality Criteria summary table for aluminum indicates that the chronic aquatic life criterion is based on studies conducted under specific receiving water conditions with a low pH (6.5 to 6.8 pH units) and low hardness (<10 mg/L as $CaCO_3$). Monitoring data demonstrates that these conditions are not similar to those in Deer Creek, which consistently has an upstream pH greater than 8.0 (the minimum pH value out of 154 sample events was 8.0) and upstream hardness concentrations ranging from 71 mg/L to 290 mg/L. The downstream pH is also consistently greater than 7.0 and downstream hardness concentrations ranged from 61 mg/L to 230 mg/L. Thus, it is unlikely that application of the chronic criterion of 87 ug/L is necessary to protect aquatic life in Deer Creek and USEPA advises that a water effects ratio may be more appropriate to better reflect the actual toxicity of aluminum to aquatic organisms.

   In the absence of an applicable chronic aquatic life criterion, the most stringent water quality criterion is the Secondary MCL - Consumer Acceptance Limit for aluminum of 200 ug/L. Effluent samples were analyzed for aluminum four times from 23 March 2006 through 21 August 2007. The MEC was measured

[3] See, Order WQO 2001-16 (Napa) and Order WQO 2004-0013 (Yuba City).

at 150 ug/L in the first of this sample series. In the three other samples, aluminum concentrations were 25 ug/L, 21 ug/L, and <50 ug/L. With an MEC of 150 ug/L, aluminum in the discharge does not exhibit reasonable potential to exceed the Secondary MCL. Thus, effluent limitations for aluminum will not be included in this Order at this time. This Order requires quarterly monitoring for aluminum along with priority pollutants and other constituents of concern during the third year of the permit term in order to further assess the potential to exceed water quality objectives.

In USEPA's *Ambient Water Quality Criteria for Aluminum—1988* [EPA 440/5-86-008], USEPA states that "[a]*cid-soluble aluminum…is probably the best measurement at the present…*"; however, USEPA has not yet approved an acid-soluble test method for aluminum. Replacing the ICP/AES portion of the analytical procedure with ICP/MS would allow lower detection limits to be achieved. Based on USEPA's discussion of aluminum analytical methods, this Order allows the use of the alternate aluminum testing protocol described above to meet monitoring requirements.

f. **Ammonia.** Untreated domestic wastewater contains ammonia. Nitrification is a biological process that converts ammonia to nitrite and nitrite to nitrate. Denitrification is a process that converts nitrate to nitrite or nitric oxide and then to nitrous oxide or nitrogen gas, which is then released to the atmosphere. The Discharger currently uses nitrification to remove ammonia from the waste stream. Inadequate or incomplete nitrification may result in the discharge of ammonia to the receiving stream. Ammonia is known to cause toxicity to aquatic organisms in surface waters. Discharges of ammonia would violate the Basin Plan narrative toxicity objective. Applying 40 CFR 122.44(d)(1)(vi)(B), it is appropriate to use USEPA's Ambient National Water Quality Criteria for the Protection of Freshwater Aquatic Life for ammonia, which was developed to be protective of aquatic organisms.

USEPA's Ambient Water Quality Criteria for the Protection of Freshwater Aquatic Life, for total ammonia, recommends acute (1-hour average; criteria maximum concentration or CMC) standards based on pH and chronic (30-day average; criteria continuous concentration or CCC) standards based on pH and temperature. USEPA also recommends that no 4-day average concentration should exceed 2.5 times the 30-day CCC. USEPA found that as pH increased, both the acute and chronic toxicity of ammonia increased. Salmonids were more sensitive to acute toxicity effects than other species. However, while the acute toxicity of ammonia was not influenced by temperature, it was found that invertebrates and young fish experienced increasing chronic toxicity effects with increasing temperature.

The maximum permitted effluent pH is 8.5, as the site-specific Basin Plan objective for pH in the Deer Creek is the range of 6.5 to 8.5. In order to protect against the worst-case short-term exposure of an organism, a pH value of 8.5 was used to derive the acute criterion. The resulting acute criterion is

2.14 mg/L.

Since Deer Creek is an effluent dominated waterbody, effluent temperature and pH data from the Discharger's monthly monitoring reports from January 2005 through December 2007 were used to develop the chronic criteria. Using effluent data, the 30-day CCC was calculated for each day when temperature and pH were measured. The resulting lowest 99.9% 30-day CCC is 1.65 mg/L (as N). The 4-day average concentration is derived in accordance with the USEPA criterion as 2.5 times the 30-day CCC. Based on the 30-day CCC of 1.65 mg/L (as N), the 4-day average concentration that should not be exceeded is 4.13 mg/L (as N).

The Regional Water Board calculates WQBELs in accordance with SIP procedures for non-CTR constituents, and ammonia is a non-CTR constituent. The SIP procedure assumes a 4-day averaging period for calculating the long-term average discharge condition (LTA). However, USEPA recommends modifying the procedure for calculating permit limits for ammonia using a 30-day averaging period for the calculation of the LTA corresponding to the 30-day CCC. Therefore, while the LTAs corresponding to the acute and 4-day chronic criteria were calculated according to SIP procedures, the LTA corresponding to the 30-day CCC was calculated assuming a 30-day averaging period. The lowest LTA representing the acute, 4-day CCC, and 30-day CCC is then selected for deriving the average monthly effluent limitation (AMEL) and the maximum daily effluent limitation (MDEL). The remainder of the WQBEL calculation for ammonia was performed according to the SIP procedures.

This Order contains a final average monthly effluent limitation (AMEL) and maximum daily effluent limitation (MDEL) for ammonia of 1.1 ug/L and 2.1 ug/L, respectively, based on USEPA's Ambient Water Quality Criteria for the Protection of Freshwater Aquatic Life (see Attachment F, Table F-5 for WQBEL calculations). Based on the sample results for the effluent, it appears the Discharger can meet this new limitation.

g. **Bis (2-ethylhexyl) phthalate.** Bis (2-ethylhexyl) phthalate is used primarily as one of several plasticizers in polyvinyl chloride (PVC) resins for fabricating flexible vinyl products. According to the Consumer Product Safety Commission, USEPA, and the Food and Drug Administration, these PVC resins are used to manufacture many products, including soft squeeze toys, balls, raincoats, adhesives, polymeric coatings, components of paper and paperboard, defoaming agents, animal glue, surface lubricants, and other products that must stay flexible and noninjurious for the lifetime of their use. The State MCL for bis (2-ethylhexyl) phthalate is 4 ug/L and the USEPA MCL is 6 ug/L. The NTR criterion for Human health protection for consumption of water and aquatic organisms is 1.8 ug/L and for consumption of aquatic organisms only is 5.9 ug/L.

The MEC for bis (2-ethylhexyl) phthalate was 2.1 ug/L, based on four samples

collected between 23 March 2006 and 21 August 2007 (three samples were non-detect and the one detection was less than the reporting level of 2.5 ug/L). Upstream receiving water data were not available.

As described above, bis (2-ethylhexyl) phthalate is a commonly used plasticizer and is to some extent ubiquitous in the environment. Since bis (2-ethylhexyl) phthalate is a common contaminant of sample containers, sampling apparatus, and analytical equipment, and sources of the detected bis (2-ethylhexyl) phthalate may be from plastics used for sampling or analytical equipment, it is uncertain whether reasonable potential actually exists and therefore effluent limitations for bis (2-ethylhexyl) phthalate are not being established at this time. Instead of limitations, additional monitoring has been established for bis (2-ethylhexyl) phthalate; should monitoring results indicate that the discharge has the reasonable potential to cause or contribute to an exceedance of a water quality standard, then this Order may be reopened and modified by adding an appropriate effluent limitation.

h. **Copper.** The CTR includes hardness-dependent criteria for the protection of freshwater aquatic life for copper. The criteria for copper are presented in dissolved concentrations. USEPA recommends conversion factors to translate dissolved concentrations to total concentrations. The USEPA default conversion factors for copper in freshwater are 0.96 for both the acute and the chronic criteria. The default water effects ratio (WER) used for calculating criteria for copper is 1.

Based on the CTR criteria calculated using the default conversion factors and WER, the Regional Water Board found that effluent concentrations of copper demonstrated reasonable potential and effluent limitations were established in Order No. R5-2002-0210. During the term of Order No. R5-2002-0210, the Discharger conducted a WER study to determine the site-specific toxicity of copper in Deer Creek, which was submitted to the Regional Water Board in March 2005. The Regional Water Board staff evaluated the results of the study and determined that the results of the study are within the expected range for a WER for a municipal wastewater discharge, the study was conducted in accordance with applicable USEPA guidance (i.e., EPA-822-R-01-005 and EPA-821-R-02-012), and the results of the study are supported by data that generated scientifically defensible results. The study concluded that a site-specific WER of 9.7 for total recoverable copper and 8.6 for dissolved copper apply to the discharge. Based on this new information, effluent copper concentrations no longer demonstrated reasonable potential to exceed water quality criteria for copper. Therefore, the Regional Water Board adopted Amendment No. 2 to Order No. R5-2002-0210 on 25 January 2007 and effluent limitations for copper were removed.

Using the worst-case measured hardness from the effluent as described in section IV.C.2.b (42 mg/L as $CaCO_3$), the USEPA recommended dissolved-to-total translator, and the site-specific WER, the applicable chronic criterion

(maximum 4-day average concentration) is 43 ug/L and the applicable acute criterion (maximum 1-hour average concentration) is 60 ug/L, as total recoverable.

The MEC for total copper was 15 ug/L, based 156 samples collected from January 2005 through December 2007. Effluent copper concentrations continue to remain below the applicable criteria. Therefore, the Regional Water Board finds that effluent copper concentrations do not demonstrate reasonable potential to exceed water quality criteria and effluent limitations have not been included in this Order, consistent with Amendment No. 2 to Order No. R5-2002-0210.

i. **Chlorodibromomethane, Dichlorobromomethane, and Total Trihalomethanes.** Order No. R5-2002-0210 contained effluent limitations for chlorodibromomethane, dichlorobromomethane, and total trihalomethanes, which are the by-products of the chlorine disinfection process. The Discharger replaced the chlorine disinfection process with UV disinfection on 2 August 2006. Monitoring data for these parameters from 2 August 2006 through 31 December 2007 indicates that these parameters no longer exhibit reasonable potential to exceed water quality objectives. Because the Discharger has modified the treatment system, monitoring data no longer indicates reasonable potential to exceed water quality objectives. Additionally, this Order prohibits the use and discharge of chlorine and/or chlorine containing substances into the receiving water. Therefore, this Order does not retain the effluent limitations for chlorodibromomethane, dichlorobromomethane, or total trihalomethanes.

j. **Electrical Conductivity. (see Subsection for Salinity)**

k. **Mercury.** The current National Ambient Water Quality Criteria for protection of freshwater aquatic life, continuous concentration, for mercury is 0.77 ug/L (30-day average, chronic criteria). The CTR contains a human health criterion (based on a threshold dose level causing neurological effects in infants) of 0.050 ug/L for waters from which both water and aquatic organisms are consumed. Both values are controversial and subject to change. In 40 CFR Part 131, USEPA acknowledges that the human health criteria may not be protective of some aquatic or endangered species and that "*...more stringent mercury limits may be determined and implemented through use of the State's narrative criterion.*" In the CTR, USEPA reserved the mercury criteria for freshwater and aquatic life and may adopt new criteria at a later date. The maximum observed effluent mercury concentration was 0.00258 ug/L. Deer Creek, via the Cosumnes River and the Mokelumne River, discharges to the Delta waterways. The Delta waterways are listed as an impaired water body pursuant to section 303(d) of the Clean Water Act because of mercury. Mercury bioaccumulates in fish tissue and, therefore, discharge of mercury to the receiving water is likely to contribute to exceedances of the narrative toxicity objective and impact beneficial uses. The SIP recommends the

Regional Water Board consider whether the mass loading of bioaccumulative pollutants should be limited in the interim to "representative current levels" pending development of applicable water quality standards or TMDL allocation. The intent is, at a minimum, to prevent further impairment while a TMDL for a particular bioaccumulative constituent is being developed. Any increase in loading of mercury to an already impaired water body would further degrade water quality. Because the Delta waterways are listed as an impaired water body for mercury, the discharge must not cause or contribute to increased mercury levels.

This Order contains a performance-based mass effluent limitation of 0.0024 lbs/month for mercury for the effluent discharged to the receiving water. This limitation is based on maintaining the mercury loading at the current level until a TMDL can be established and USEPA develops mercury standards that are protective of human health. The mass limitation was derived using the maximum observed effluent mercury concentration and the design average daily flow rate of the treatment plant (3.6 MGD):

(0.00000258 mg/L) * 3.6 MGD * 8.34 * [365 days/12 months] = 0.0024 lbs/month

If the Regional Water Board determines that a mercury offset program is feasible for Dischargers subject to a NPDES permit, this Order may be reopened to reevaluate the mercury mass loading limitation(s) and the need for a mercury offset program.

I. **Nitrite and Nitrate.** Untreated domestic wastewater contains ammonia. Nitrification is a biological process that converts ammonia to nitrite and nitrite to nitrate. Denitrification is a process that converts nitrate to nitrite or nitric oxide and then to nitrous oxide or nitrogen gas, which is then released to the atmosphere. Nitrate and nitrite are known to cause adverse health effects in humans. The California DPH has adopted Primary MCLs at Title 22 of the California Code of Regulations (CCR), Table 64431-A, for the protection of human health for nitrite and nitrate that are equal to 1 mg/L and 10 mg/L (measured as nitrogen), respectively. Title 22 CCR, Table 64431-A, also includes a primary MCL of 10,000 µg/L for the sum of nitrate and nitrite, measured as nitrogen.

USEPA has developed a primary MCL and an MCL goal of 1,000 µg/L for nitrite (as nitrogen). For nitrate, USEPA has developed Drinking Water Standards (10,000 µg/L as Primary MCL) and Ambient Water Quality Criteria for protection of human health (10,000 µg/L for non-cancer health effects). Recent toxicity studies have indicated a possibility that nitrate is toxic to aquatic organisms.

Order No. R5-2002-0210 included an AMEL for the sum of nitrate and nitrite of 10 mg/L. The MEC for nitrate plus nitrite was 14.1 mg/L, based on 333 samples collected between January 2005 through December 2007. The